WHAT IS CLAIMED IS:

1. A pressure vessel comprising an outer housing; said housing having a closed end and opposing open end; said vessel further comprising an end cap assembly sealing the open end of said housing, said outer housing and said end cap assembly forming a pressure boundary surface around the vessel interior;

wherein said vessel comprises a vent mechanism located on said pressure boundary surface, wherein said vent mechanism activates to release gas pressure from within the vessel, said vent mechanism comprising a first rupture forming a groove on said boundary surface, said groove defining a material region thinner than the average thickness of said boundary; and a second rupture zone on said boundary surface, wherein said first rupture zone ruptures when gas pressure within the cell rises to a first pressure level and said second rupture zone ruptures when gas pressure within the cell rises to a second pressure level higher than said first pressure level.

2. The vessel of claim 1 wherein said first and second rupture zones are spaced apart on said boundary surface.

3. The vessel of claim 1 wherein said first rupture zone ruptures when gas pressure within the vessel rises to a pressure between about 250 and 800 psig (1724×10^3 and 5515×10^3 pascal gage).

4. The vessel of claim 1 wherein said first rupture zone ruptures when gas pressure within the vessel rises to a pressure between about 400 and 800 psig (2758×10^3 and 5515×10^3 pascal gage).

5. The vessel of claim 1 wherein said second rupture zone ruptures when gas pressure within the vessel reaches a pressure between about 800 and 2500 psig (5515 x 10^3 and 17235 x 10^3 pascal gage).

6. The vessel of claim 1 wherein the second rupture zone comprises a laser weld within a portion of said boundary surface.

7. The vessel of claim 1 wherein said groove is formed by stamping said boundary surface.

8. The vessel of claim 6 wherein said laser weld is formed between said housing and a metal member fitted within the open end of said housing thereby closing said open end.

9. The vessel of claim 6 wherein said laser weld is formed between the inside surface of said housing and the edge of a metal member fitted within the open end of said housing thereby closing said open end.

10. The vessel of claim 6 wherein said laser weld is made by a Nd:Yag laser and said laser weld ruptures when gas pressure within the cell rises to a level of between about 800 and 2500 psig (5515 x 10^3 and 17235 x 10^3 pascal gage).

11. The vessel of claim 8 wherein said vessel has a cuboid shape and said metal member is a rectangular metal plate.

12. The vessel of claim 8 wherein said metal member is a rectangular plate having an aperture therethrough.

13. A primary alkaline cell comprising a negative and a positive terminal, and an outer housing of cuboid shape, said housing having a closed end and opposing open end, said cell further comprising an anode comprising zinc and a cathode comprising MnO_2 within said housing, a separator between said anode and cathode, and an end cap assembly sealing the open end of said housing thereby forming a boundary surface around the cell interior;

wherein the cathode comprises a plurality of rectangular shaped cathode slabs; wherein each of said slabs has a central opening devoid of cathode material; wherein said cathode slabs are stacked within the housing so that said openings devoid of cathode material form a core, with the outer surface of said cathode contacting the inside surface of said housing;

wherein said cell comprises a vent mechanism located on said boundary surface, wherein said vent mechanism activates to release gas pressure from within the cell as said gas pressure rises, said vent mechanism comprising a first rupture zone comprising a groove on said boundary surface, said groove defining an underlying material region thinner than the average thickness of said boundary; and a second rupture zone on said boundary surface, wherein the first zone ruptures when gas pressure within the cell rises to a first pressure level and said second zone ruptures when gas pressure within the cell rises to a second pressure level being higher than said first pressure level allowing gas from within the cell to escape from the cell interior through said ruptures.

14. The alkaline cell of claim 13 wherein said first and second rupture zones are spaced apart on said boundary surface.

15. The alkaline cell of claim 13 wherein said first rupture zone ruptures when gas pressure within the vessel rises to a pressure between about 250 and 800 psig (1724 x 10^3 and 5515 x 10^3 pascal gage).

16. The alkaline cell of claim 13 wherein said first rupture zone ruptures when gas pressure within the vessel rises to a pressure between about 400 and 800 psig (2758 x 10^3 and 5515 x 10^3 pascal gage).

17. The alkaline cell of claim 13 wherein said second rupture zone ruptures when gas pressure within the vessel reaches a pressure between about 800 and 2500 psig (5515 x 10^3 and 17235 x 10^3 pascal gage).

18. The alkaline cell of claim 13 wherein the second rupture zone comprises a laser weld within a portion of said boundary surface.

19. The alkaline cell of claim 13 wherein said groove is formed by stamping said boundary surface.

20. The alkaline cell of claim 18 wherein said end cap assembly comprises a metal cover and said laser weld is formed between said housing and a said metal cover fitted within the open end of said housing thereby closing said open end.

21. The alkaline cell of claim 18 wherein said end cap assembly comprises a metal cover and said laser weld is formed

between the inside surface of said housing and the edge of a metal cover fitted within the open end of said housing thereby closing said open end.

22. The alkaline cell of claim 18 wherein said laser weld is formed by a Nd:Yag laser and said laser weld ruptures when gas pressure within the cell rises to a level of between about 800 and 2500 psig (5515×10^3 and 17235×10^3 pascal gage).

23. The alkaline cell of claim 20 wherein said metal cover is a rectangular metal plate.

24. The alkaline cell of claim 20 wherein said metal cover is a rectangular plate having an aperture therethrough.

25. The alkaline cell of claim 24 wherein said end cap assembly comprises said metal cover, a terminal end plate, an insulating seal member, and an elongated electrically conductive member having a portion thereof passing through both said insulating seal member and said metal cover, wherein said conductive member is electrically connected to said terminal end plate.

26. The alkaline cell of claim 25 wherein said electrically conductive member is electrically connected to said anode.

27. The alkaline cell of claims 26 wherein a portion of said elongated conductive member penetrates into said anode and functions as an anode current collector.

28. The alkaline cell of claim 26 wherein said end cap assembly further comprises an electrically insulating member

between said terminal end plate and said metal cover thereby insulating said terminal end plate from said metal cover.

29. The alkaline cell of claim 28 wherein said electrically insulating member between said terminal end plate and said metal cover comprises plastic material.

30. The alkaline cell of claim 28 wherein said electrically insulating member between said terminal end plate and said metal cover comprises paper material.

31. The alkaline cell of claim 28 wherein said terminal end plate has a central area of smaller thickness than the average thickness of said end plate, wherein said elongated conductive member is welded by electrical resistance welding to said terminal end plate at said central area.

32. The alkaline cell of claim 25 wherein sealant material comprising asphalt is applied between at least a portion of the surface of said elongated conductive member and said metal cover to prevent leakage of alkaline electrolyte therethrough.

33. The alkaline cell of claim 13 wherein at least a portion of said central opening within said cathode slabs forms a cavity for housing said anode.

34. The alkaline cell of claim 33 wherein said cavity has an oblong configuration.

35. The alkaline cell of claim 13 wherein the cell comprises alkaline electrolyte comprising an aqueous solution of potassium hydroxide.

36. The alkaline cell of claim 35 wherein the cell is balanced so that the cathode is in excess such that the ratio of theoretical capacity of the MnO_2 based on a theoretical specific value of 370 mAmp-hr per gram MnO_2, divided by the mAmp-hr capacity of zinc based on a theoretical specific value of 820 mAmp-hr per gram zinc, is between about 1.2 and 2.0.

37. The alkaline cell of claim 35 wherein the cell is balanced so that the cathode is in excess such that the ratio of theoretical capacity of the MnO_2 based on a theoretical specific value of 370 mAmp-hr per gram MnO_2, divided by the mAmp-hr capacity of zinc based on a theoretical specific value of 820 mAmp-hr per gram zinc, is between about 1.4 and 1.8.

38. The alkaline cell of claim 13 wherein said cell has an overall thickness of between about 5 and 10 mm, wherein said overall thickness is defined as the distance between the outside surface of opposing sides of said housing defining the short dimension of said housing.

39. The alkaline cell of claim 13 wherein the housing comprises metal having a wall thickness of between about 0.30 mm and 0.50 mm.

40. The alkaline cell of claim 13 wherein the housing comprises metal having a wall thickness of between about 0.30 mm and 0.40 mm.

41. The alkaline cell of claim 13 wherein said housing comprises steel.

42. A primary alkaline cell comprising a negative and a positive terminal, and an outer housing of cuboid shape, said housing having a closed end and opposing open end, said cell further comprising an anode comprising zinc and a cathode comprising MnO_2 within said housing, a separator between said anode and cathode, and an end cap assembly sealing the open end of said housing thereby forming a boundary surface around the cell interior;

wherein the cathode comprises a plurality of rectangular shaped cathode slabs; wherein each of said slabs has a central opening devoid of cathode material; wherein said cathode slabs are stacked within the housing along the cell's central longitudinal axis so that said openings devoid of cathode material form a central core along said longitudinal axis, with the outer surface of said cathode contacting the inside surface of said housing;

wherein said cell comprises a vent mechanism located on said boundary surface, wherein said vent mechanism activates to release gas pressure from within the cell as said gas pressure rises, said vent mechanism comprising a first and a second rupture zone on said boundary surface, wherein at least one of said rupture zones comprises a groove on said boundary surface, said groove defining an underlying material region thinner than the average thickness of said boundary, wherein the first zone ruptures when gas pressure within the cell rises to a first pressure level and said second zone ruptures when gas pressure within the cell rises to a second pressure level being higher than said first pressure level allowing gas from within the cell to escape from the cell interior through said ruptures.

43. The cell of claim 42 wherein said first and second rupture zones are spaced apart on said boundary surface.

44. The cell of claim 42 wherein the second rupture zone comprises a laser weld within a portion of said boundary surface.

45. The cell of claim 42 wherein said groove is formed by stamping said boundary surface.

46. The cell of claim 42 wherein the first zone on said boundary surface ruptures when gas pressure within the cell interior reaches a pressure level between about 250 and 800 psig (1724×10^3 and 5515×10^3 pascal gage) and said second zone on said boundary surface ruptures when gas pressure within the cell interior reaches a pressure level between about 800 and 2500 psig (5515×10^3 and 17235×10^3 pascal gage).

47. The cell of claim 42 wherein the first zone on said boundary surface ruptures when gas pressure within the cell interior reaches a pressure level between about 400 and 800 psig (2758×10^3 and 5515×10^3 pascal gage) and said second zone on said boundary surface ruptures when gas pressure within the cell interior reaches a pressure level between about 800 and 2500 psig (5515×10^3 and 1724×10^3 pascal gage).

48. The cell of claim 42 wherein said end cap assembly comprises a metal cover and the first rupture zone is formed by a groove on the outside surface of said housing and the second rupture zone is formed by a laser weld between the edge of a metal member and the inside surface of said housing thereby fixing said metal member along a portion of its edge to the

inside surface of said outer housing in proximity to the open end of said housing.

49. The cell of claim 48 wherein said metal cover is a rectangular plate.

50. The cell of claim 42 wherein said groove runs parallel to the closed end of the cell.

51. The alkaline cell of claim 42 wherein the housing comprises metal having a wall thickness of between about 0.30 mm and 0.50 mm.

52. The alkaline cell of claim 42 wherein said cell has an overall thickness of between about 5 and 10 mm, wherein said overall thickness is defined as the distance between the outside surface of opposing sides of said housing defining the short dimension of said housing.

53. A method of closing the outer housing of an alkaline cell, said outer housing having a closed end and opposing open end and at least one flat surface, the method comprising:

inserting a metal cover into the housing in proximity to the open end thereof so that the edge of said metal cover abuts the housing and at least a portion of said metal cover isexposed; applying a heat conductive medium to a portion of said metal cover; and laser welding the edge of said cover to the housing to close said open end; wherein said heat conductive medium absorbs at least a portion of the heat generated during said laser welding.

54. The method of claim 53 wherein said metal cover has a portion of its exposed surface curved forming a trough and said method further comprises placing said heat conductive medium in said trough.

55. The method of claim 53 wherein sufficient heat generated by said welding is absorbed by said heat conductive medium so that the metal cover does not reach a temperature greater than about 100° C during said welding.

56. The method of claim 53 wherein said heat conductive medium comprises a solid or liquid.

57. The method of claim 53 wherein said heat conductive medium comprises a metal.

58. The method of claim 53 further comprising after welding said metal cover to said housing, placing a nonmetallic sealing member over said metal cover so that said sealing member contacts at least a portion of said metal cover.

59. The method of claim 53 wherein said heat conductive medium comprises dionized water applied to an exposed portion of said metal cover.

60. The method of claim 53 wherein said heat conductive medium comprises an aqueous solution comprising polyvinylalcohol and potassium hydroxide, wherein said polyvinylalcohol coats an exposed portion of said metal cover.

61. The method of claim 53 wherein said heat conductive medium comprises an aqueous solution comprising a gelling agent

wherein said gelling agent coats an exposed portion of said metal cover.

62. The method of claim 58 further comprising coating a portion of said nonmetallic sealing member with a gelling agent prior to placing said sealing member over said metal cover.

63. The method of claim 58 wherein said sealing member comprises plastic.

64. The method of claim 58 wherein said sealing member comprises paper.

65. The method of claim 53 wherein said laser welding is accomplished employing a Nd:Yag laser.

66. The method of claim 53 wherein said closed housing is in the shape of a cuboid.

67. The method of claim 53 wherein said housing has an overall thickness of between about 5 and 10 mm, wherein said overall thickness is defined as the distance between the outside surface of opposing sides of said housing defining the short dimension of said housing.

68. A method of closing the outer housing of an alkaline cell, said outer housing having a closed end and opposing open end and at least one flat surface, the method comprising:

inserting a metal cover into the housing in proximity to the open end thereof so that the edge of said metal cover abuts the housing and at least a portion of said metal cover is exposed; cooling the metal cover to a temperature below ambient

room temperature; and laser welding the edge of said cover to the housing to close said open end.

69. The method of claim 68 wherein the metal cover is cooled to a temperature sufficiently below ambient room temperature so that the metal cover does not reach a temperature greater than about 100° C during said welding.

70. The method of claim 68 further comprising after welding said metal cover to said housing, placing a nonmetallic sealing member over said metal cover so that said sealing member contacts at least a portion of said metal cover.

71. The method of claim 68 wherein said metal cover is cooled by applying dionized water to an exposed portion of said metal cover.

72. The method of claim 68 wherein said metal cover is cooled by applying thereto an aqueous solution comprising polyvinylalcohol and potassium hydroxide, wherein said polyvinylalcohol coats an exposed portion of said metal cover.

73. The method of claim 68 wherein said metal cover is cooled by applying an aqueous solution comprising a gelling agent wherein said gelling agent coats an exposed portion of said metal cover.

74. The method of claim 70 further comprising coating a portion of said nonmetallic sealing member with a gelling agent prior to placing said sealing member over said metal cover.

75. The method of claim 70 wherein said sealing member comprises plastic.

76. The method of claim 70 wherein said sealing member comprises paper.

77. The method of claim 68 wherein said laser welding is accomplished employing a Nd:Yag laser.

78. The method of claim 68 wherein said closed housing is in the shape of a cuboid.

79. The method of claim 78 wherein said housing has an overall thickness of between about 5 and 10 mm, wherein said overall thickness is defined as the distance between the outside surface of opposing sides of said housing defining the short dimension of said housing.